

ATTACHMENT III-1

RCRA FACILITY ASSESSMENT

- * References and citations made to specific sections, tables, figures or other sources which are not included in this Attachment are available in BFI's revised Post-Closure Permit application, dated May, 1989 and is in the Administrative Record. The Administrative Record is located at U. S. Environmental Protection Agency, Region II, Permits Administration Branch, 26 Federal Plaza, New York, N.Y., 10278 and the Puerto Rico Environmental Quality Board, Santurce, Puerto Rico, 00910-1488.

4. Labeling and Placarding of Hazardous Material

Industrial requirements for Labeling and/or placarding of hazardous substance are explained in this presentation. Different sizes, shapes and colors used in the labels and their significance. Employees are trained to recognize and react to labels and placards.

5. Hazardous Waste Identification and Response

Every day our landfill employees are faced with potentially hazardous or questionable wastes. This program is designed to train our landfill employees in identifying hazardous waste; how to prevent this type of waste from entering BFI facilities; and how to deal with it if it does.

6. Basic Chemical Concepts

Elements of chemistry are discussed at landfill sites, their reactive nature and composition. Importance of waste recognition is presented to avoid reaction between waste.

7. Respirator/Protective Clothing

The use of appropriate personal protective equipment while on the job is essential, especially in potentially hazardous working environments. This program is designed to make employees aware of the dangers that may be present in their working environment; to describe appropriate personal protective equipment; and to outline BFI's procedures for use, handling and care of this equipment.

8. Hearing Conservation

Mowing the lawn, shooting firearms, and sandblasting are just a few examples of work we do that is high in noise. Exposure to excessive noise over many years can result in permanent hearing loss that cannot be corrected by a hearing aid or surgical means. This program covers how the human ear responds to noise and what BFI personnel can do to avoid noise-induced hearing loss.

**FINAL RCRA FACILITY ASSESSMENT REPORT
MUNICIPAL DUMP FACILITY
PONCE, PUERTO RICO
EPA I.D. NO. PRD 98 0594709**

**Prepared for
U. S. Environmental Protection Agency, Region II
26 Federal Plaza
New York, New York 10278**

**Contract No. 68-01-7038
Work Assignment No. RO2-01-34**

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October 1987

RCRA FACILITY ASSESSMENT
MUNICIPAL DUMP FACILITY
PONCE, PUERTO RICO
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EXECUTIVE SUMMARY

This report presents the results of the Preliminary Review (PR) and Visual Site Inspection (VSI) portions of the RCRA Facility Assessment (RFA) of the Municipal Dumping Facility in Ponce, Puerto Rico. The PR and VSI resulted in the identification of four solid waste management units (SWMUs). These are:

1. Surface Impoundment #1
2. Surface Impoundment #2
3. Sanitary Landfill
4. Liquid Waste Lagoon

The two surface impoundments have been closed. The landfill is currently active, though it reportedly receives only solid wastes. The liquid waste lagoon is presently inactive and only limited information was available on this unit.

During the PR, a drum and tank storage area was identified in the reviewing of the facility's Part A application. It was determined during the VSI, that this was a proposed unit only and did not exist.

The facility has been used for a number of waste management activities, including hazardous and nonhazardous waste disposal. The facility was operated by the Municipality of Ponce as an open waste burning site during the early 1970s. In 1974, the site was converted to a sanitary landfill and in 1975 the municipality began attempts to obtain a permit to expand the sanitary landfill. In 1980, the Puerto Rico Environmental Quality Board (EQB) authorized the municipality to accept heavy metal wastes from SK & F Laboratories at two surface impoundments at the site and in June 1981, the facility was granted RCRA interim status for the landfill and the surface impoundments. In February 1982, EPA inspected the site and determined that the landfill did not qualify for interim status and that the management of the surface impoundments was not in compliance with EPA standards. As a result, the municipality contracted with CECOS to manage and upgrade the facility.

However, in September of 1984, CECOS was ordered by EQB to cease construction of the new hazardous waste disposal facility because of violations of the Regulations for the Control of Hazardous Solid Wastes. As of late 1985, CECOS was continuing to seek a Part B permit and construction of the new disposal facility had not commenced.

Based on the results of the PR and VSI, a Sampling Visit (SV), within the scope of the RFA program, is not warranted. There is evidence of documented soil and groundwater contamination at the facility (see Attachment A). As a result, any further investigative sampling activities, necessary to characterize the extent of this contamination, should be incorporated within the scope of a RCRA Facility Investigation (RFI) program.

1.0 PRELIMINARY REVIEW/VISUAL SITE INSPECTION

1.1 Introduction

This report presents the results of the Preliminary Review (PR) and Visual Site Inspection (VSI) portions of the RCRA Facility Assessment (RFA) of the Municipal Dumping Facility, Ponce, Puerto Rico. The facility, owned by the Municipality of Ponce, is operated by CECOS International, Inc. (CECOS).

The objectives of this RFA include:

1. Identifying all past and present solid waste management units (SWMUs) and other areas of concern at the Municipal Dumping Facility, Ponce, Puerto Rico.
2. Collecting SWMU-related data from file reviews; performance of a visual site inspection, and an evaluation of these data to assess the potential for release of hazardous wastes or constituents from each SWMU.
3. Identifying the need for further actions.

The findings, conclusions and suggested further actions contained in this report are based on:

1. A desk-top study of the RCRA permitting, compliance, and enforcement files for the facility obtained from EPA Region II and EQB including Part A permit application, compliance inspection reports, regulatory enforcement orders, legal documents, and the Part B permit application for a proposed hazardous waste management facility. A list of the references used in the preparation of this report is provided in Section 1.7.
2. A visual site inspection (VSI) of the facility performed on July 17, 1986. Findings of the VSI are presented in Section 1.8; photographs are provided in Appendix C.
3. Personal communication with EPA Region II and EQB personnel and with facility representatives.

Section 1.2 of this report presents a description of the facility including site history and waste management activities. The environmental setting for the facility is described in Section 1.3. A description of the solid waste management units, conclusions and the suggestions for further action are presented in Sections 1.4 and 1.6.

1.2 Facility and Process Description

The Municipal Dumping Facility of Ponce is located on Avenue Baramaya, Barrio La Cotorra, in the south-central portion of Puerto Rico, approximately one mile west of the city limits of Ponce (see Figure 1-1). The facility was operated by the Municipality of Ponce as an open waste burning site during the early 1970's, but was converted to a sanitary landfill in 1974. In 1975, the municipality began attempts to acquire a permit for expansion of the site as a sanitary landfill. On February 25, 1980, EQB authorized SK & F Laboratories to dispose of industrial wastes at the Ponce site. These wastes reportedly contained heavy metals (barium, chromium, copper, nickel, silver, and zinc), halogenated organics, soluble organic carbon, sulfide and cyanide. Between 1974 and 1980, a number of state agencies and private industries used the site for the disposal of hazardous wastes. The type and quantity of known hazardous wastes is provided in Table 1-1. (References 1,2)

The Municipality of Ponce submitted a Part A permit application on November 19, 1980, and supplemented the application by sending additional information to EQB on May 5, 1981. On June 16, 1981, interim status was granted for the operation of a hazardous waste management facility at the Ponce site, including two surface impoundments (SWMUs 1 and 2), and a landfill (SWMU 3). The Part A application also included a drum and tank storage area. It was determined during the VSI that this area was only proposed in the application and was never built (References 1, 2)

On February 25, 1982, EPA conducted a site inspection, and subsequently determined on June 4, 1982 that the landfill did not qualify for interim status because "...no record of its existing operation [as a hazardous waste landfill] was evident during the February 25, 1982 inspection ..." (Reference 2). EPA also notified Ponce officials that their management of the two surface impoundments was not in compliance with EPA standards.

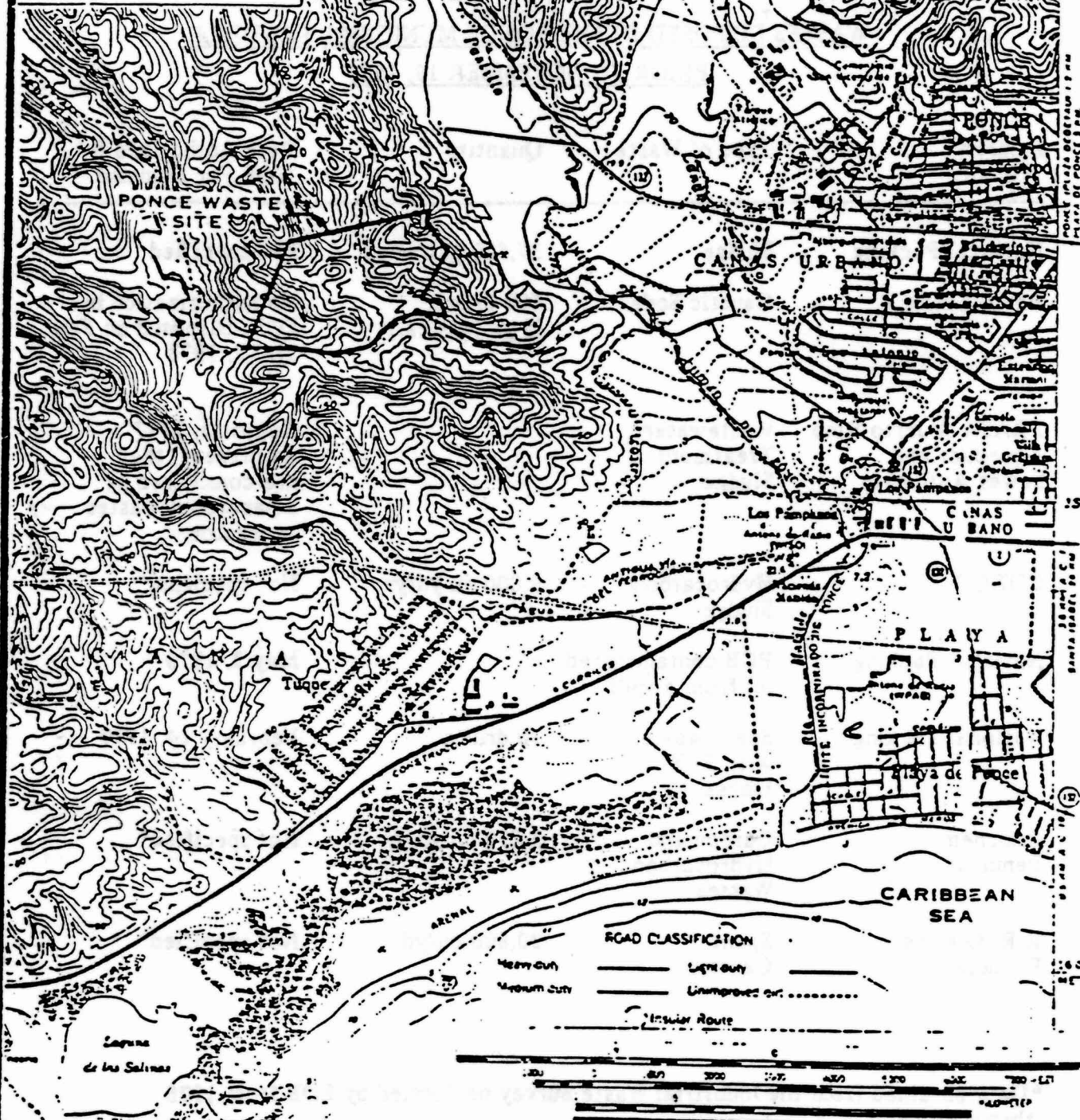
By 1983, Ponce's mayor had negotiated with CECOS, for management of the site. On January 24, 1983, CECOS assured EPA that they would conduct a geohydrologic study of the site, install groundwater monitoring wells, remediate uncontrolled hazardous wastes, and upgrade the facility utilizing state-of-the-art design criteria. On May 16, 1983, the Municipality and CECOS submitted a joint agreement to EPA to redress the violations to the interim status requirements. The plan was approved by EPA on the same day, and interim status was reauthorized for the landfill on August 23, 1983. (Ref. 1,2)

On June 15, 1983, a Partial Closure Plan for the two surface impoundments was submitted to EPA by RECRA Research, Inc. Amherst, New York, on behalf of CECOS. The closure was completed on September 24, 1983 without an EPA approval. Closure activities involved the solidification of the waste sludge material and excavation of the solidified waste, the impoundment liner and the underlying sand layer (exact depth not provided). The containment berm was graded into each impoundment and one (1) foot of cover material (obtained from a borrow area located on the site) was applied to each impoundment. The excavated materials were transported to and disposed of at Browning Ferris Industries' (BFI's) Calcasieu facility in Louisiana (References 3,4,5,13).

On August 23, 1983 CECOS submitted a Part B application to EPA for a proposed new hazardous waste management system. EPA indicated that the major deficiency in the application was the inadequacy of the groundwater monitoring program at the site. A revised Part B application was submitted on May 15, 1984 (Reference 1, 2).

On December 19, 1983, a lawsuit was filed by residents living near the site. The suit, Serrano et al vs CECOS (Civil Proceeding No. 83-3143), sought a preliminary injunction enjoining construction activity at the site and a permanent injunction precluding CECOS from operating a hazardous waste dumping facility at the site. Also, the Mayor of Ponce, on behalf of the Municipality, filed a suit against CECOS for the company's failure to comply with all local and federal laws pertaining to the site.

On September 5, 1984, EQB ordered CECOS to cease and desist from operating and constructing the hazardous waste dumping facility for alleged violations of the Regulation for the Control of Hazardous Solid Wastes, though a temporary permit for handling non-industrial, non-hazardous wastes was granted. In response, CECOS and Ponce submitted a joint "Management Agreement" to improve the site and bring it into compliance with EPA standards (Reference 1).



BASE MAP FROM: U.S.G.S. PENUELAS (1964) AND
PUNTA CUCHARA (1964)
TOPOGRAPHIC QUADRANGLE MAPS
(Source: RCRA Part B Permit Application for
Ponce Center for Environmental Control, Re-
vised May 1984. Appendix 4- Site Charac-
terization)


 LAW ENGINEERING TESTING COMPANY Marietta, Georgia			
CECOS INTERNATIONAL, INC. Buffalo, New York			
	BY	DATE	PONCE WASTE FACILITY SITE LOCATION MAP FIGURE 1-1
DRAWN	FLA	7/22/83	
CHECKED	M.P.	7/22/83	
APPROVED	J.L.	7	

TABLE 1-1

WASTES DISPOSED IN THE PONCE MUNICIPAL LANDFILL
PRIOR TO NOVEMBER 19, 1980

Industry Name	Type of Waste	Quantity	Date Authorized By EQB For Disposal
National Packing	Sludge	37,500 gal/week	Not specified
Barco Leslie B.	Caustic Soda	500 drums (5 gallons ea.)	No authorization by EQB. Disposed on Feb. 11-12, 1978
PRASA (Puerto Rico Aqueduct and Sewer Authority)	Wastewater Treatment Sludge		August 3, 1977. At present, they are considered as a hazardous wastes generator.
CORCO	Hydrocarbon Sludge	9,000 cu yd/yr	Not specified*
National Packing	PCB contaminated oil from a spill		May 2, 1978
National Packing	Spent wastes with PCB traces	10 drums	February 14, 1979
Oxochem Penuelas	Carbon and Hydrocarbon Wastes	2,080 cu yd/yr	Not specified*
R.R. Olefins Penuelas	Spent Caustic	20,800 cu/yd	Not specified*

*Data obtained from the Industrial Waste Survey performed by EQB from 1978 through 1980.

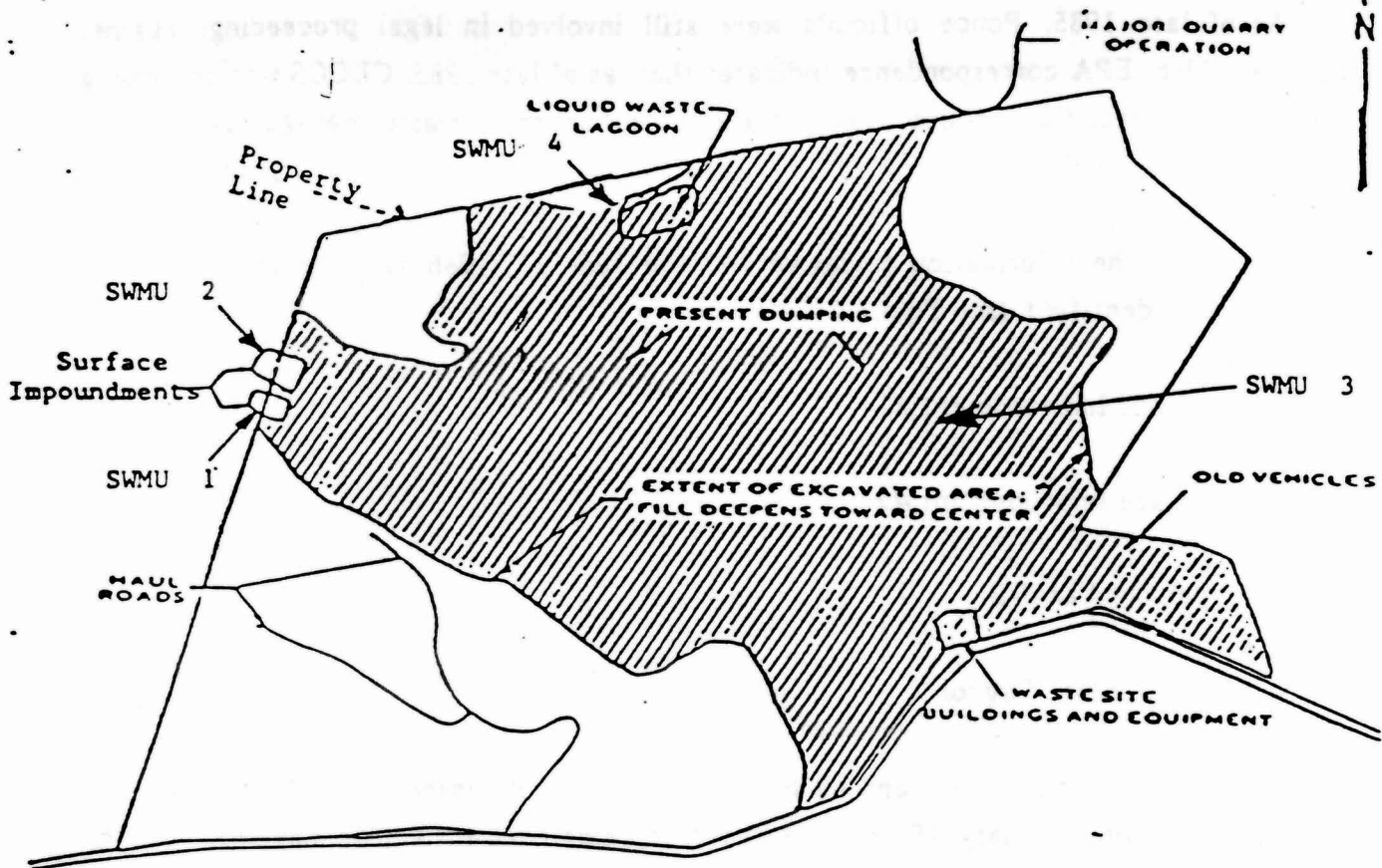
(Source: Given by CECOS during VSI conducted on July 17, 1986)

As of late 1985, Ponce officials were still involved in legal proceedings against CECOS. Also, EPA correspondence indicates that, as of late 1985, CECOS was continuing the permit process for the site. The proposed new hazardous waste management facility has not yet been built.

Based on the information reviewed and the June 17, 1986 VSI, the following four SWMUs were identified. (see Figure 1-2):

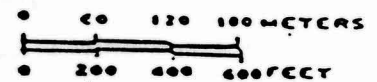
1. Surface Impoundment #1
2. Surface Impoundment #2
3. Sanitary Landfill
4. Liquid Waste Lagoon

Surface impoundments #1 and #2 have been closed. An inspection of the Municipal Dump by EPA on February 25, 1983 reported the existence of 3 impoundments. At the time of this inspection Surface Impoundment #2 (SWMU 2) was in use. The other two impoundments, located adjacent, were empty. These impoundments were described as being lined with cement (with many holes and cracks) and unlined, respectively. However, other pertinent reference materials refer to the existence of only two such impoundments and no other information concerning the existence of a third impoundment was found. Therefore given the proximity of the two impoundments referenced in the EPA report; their identical operational use and wastes managed and the compromised integrity of their liners, these units are described as SWMU #1. The landfill still remains active. However, it receives only solid wastes. The existence of the liquid waste lagoon is based on interpretation of surface features from aerial photos taken on March 23, 1983, by Law Engineering. This lagoon reportedly received wastes from a nearby tuna packing operation.



NOTES:

1. This plan is based on an interpretation of surface features from aerial photos taken on March 23, 1983 by LAW Engineering.
2. The shadowed area represents dumping operations of the sanitary landfill.



Source: RCRA Part B Permit Application for Ponce Center for Environmental Control, Revised May, 1984 prepared by CECOS International, Inc., Kenmore, NY.

FIGURE 1-2 Facility Plan - Municipality Dumping Facility of Ponce

1.3 Environmental Setting

1.3.1 Meteorology (References 9,11,12)

Puerto Rico's climate is governed by two primary meteorological forces: easterly winds and cold fronts. The dominant winds carrying these disturbances are the trade winds, which blow constantly from the northeast. The impact of these winds on a particular area within the island is largely a function of topography.

Easterly winds carry moisture-laden air from northeast of the island. The air moves inland, rises into the mountains where it cools, the moisture condenses, and precipitation results. Easterly winds, which result in weather conditions varying from brief cloudiness to several days of rain, are the dominant weather force from May to November. The island's occasional tropical storm, flooding rains, and hurricanes are also associated with easterly winds.

The southern edge of cold fronts moving over the southeastern United States pass over the island. These fronts are important meteorological forces from November to April and may bring several days of continuous rainfall to parts of Puerto Rico. The northwest corner of the island is greatly affected by these fronts than other parts of the island.

Puerto Rico is located within the great Northern Equatorial Current Gyre. Evaporation from these warm currents provides moisture for the showers which occasionally bring relief to the Ponce environs. The topography controls not only the rain deposition, but also results in substantial drying of the southern slopes.

Ponce experiences hotter temperatures and significantly less precipitation than most of Puerto Rico. The Ponce site is located in the south central coastal zone where the climate is characterized as semi arid with an average annual rainfall well below that of the other (northern) parts of the island. The mean annual temperature is 79° F. In January, the mean maximum temperature is 86° F and the mean minimum is 66° F. In July, the mean maximum is 90° F and the mean minimum is 72° F. Humidity averages 70 percent during the day and 80 percent at night. Historically, the mean annual precipitation is 36 inches, though between 1972 and 1986 precipitation averaged only 30.3 inches per year. The data show a wide variation in annual rainfall amounts at Ponce.

On the average, evapotranspiration is equal to 91 percent of the precipitation. For Ponce, the hurricane season runs from June through October and may involve up to 40 inches of rain per event (Reference 11, pg 13).

1.3.2 Floodplain and Surface Water (References 4,10,11)

The major portion of the site is located in the drainage basin of the Rio de Pastillo. Approximately 10 percent of the site (the southwestern corner) drains into the Quebrada del Agua to the west. Both streams flow from the northwest to the southeast into the Caribbean Sea about 2 miles south of the site.

A stream which previously entered the site at the north and left at the southeastern corner was cut off by landfilling. By the late 1970s, there was no longer a stream on site as a result of landfilling activities.

The 100 year floodplain is located approximately 2,000 feet west of the site (Reference 11, pg. 14).

1.3.3 Geology and Soils (References 4,6,7)

The site occupies an area of rugged hills west of the City of Ponce. The elevation ranges from 131 to 459 feet above sea level. The topography slopes upward from east to west. Two geologic formations are recognized within the site: Ponce Limestone and Juana Diaz. The Ponce Limestone is orange, very fossiliferous and porous except near the base where a hard crystalline member and a homogenous silty member overlie the Juana Diaz beds in slight unconformity. The Juana Diaz formation is of mid-Oligocene to Miocene age and consists of white to brown and greyish-orange bedded calcareous arenites and siltstones with variable clay content. The northern half of the site is underlain by Ponce limestone while the southern half is underlain by predominately Juana Diaz beds. However, detailed mapping revealed that the southern hills are capped by lower Ponce beds which are slightly uncomfortable above the Juanan Diaz Formation. The stratigraphic and structural relationships of geologic units within the site are shown in Figure 1-3.

Several faults of varying lateral extent have been mapped within the site. The largest of these faults traverse the site in a northwesterly direction (see Figure 1-3). Although an actual fault line is not visible, the stratigraphic relationships across the fault indicate roughly 400 feet of vertical offset with the downthrown side to the northeast. Other faults in the area are generally normal, downthrown to the northeast.

The main northwesterly trending faults have resulted in an upthrown block of Juana Diaz Formation forming a surface outcrop of older Juana Diaz amongst outcrops of younger Ponce Formation. The southwestern property boundary of the site approximates the southern fault contact between Ponce and Juana Diaz Formations. The northern fault contact is expressed on-site in the western hills. The upthrown block of Juana Diaz Formation is capped by basal Ponce Formation (Reference 11, pg. 12).

Faults which cut the Ponce Limestone are Miocene in age or younger. Faults which are truncated by the Ponce Limestone are of Miocene age or older. These faults occurred shortly after the emplacement of the formations. It is not likely that further faulting is imminent because there has been no displacement in recent times.

The soils of the Juana Diaz are hard to very hard and consist of silt, clay and scattered zones of sand. The Ponce formation consists of soils which are dense to very dense and yellowish brown to pale red. The silty fine to coarse sand contains limestone and calcarenite fragments. Some aluminum also was found at the site. These brown sandy clays are very stiff to very hard and contain calcarenite fragments and fossils.

Limestone seams and fragments are found throughout these soils. The upper layer is one to three feet thick and composed of humus and organic material. The lower layer is up to ten feet thick and consists of caliche, which is partially cemented in some places. Most of the site has been disturbed by construction activity.

In addition to the naturally occurring soils found on the slopes of the site, sanitary landfill materials cover the lower elevations. This material reaches thicknesses of up to 54 feet, is very unstable and emits methane gas. "Perched" water exists in places throughout the landfill-covered areas.

1.3.4 Groundwater (References 4,6,7,8)

Groundwater occurs in two principal geologic formations at the site. Each formation has its own associated groundwater profile. In the southwestern portion of the site, groundwater occurs in a greenish gray sandy clayey silt unit of the Juana Diaz formation. In this area of the site, the outcropping Juana Diaz beds consist of faulted and tilted (25 degrees) layers of siltstone and mudstone which are unsaturated to a depth generally between 50 and 150 feet. This unsaturated zone has very low permeability (on the order of 10^{-7} cm/sec or less).

The northern half of the site is underlain by Ponce limestone. This rock is generally orange to orange brown and is extremely porous. It consists of abundant fossils, primarily mollusks and corals, and crystalline limestone in a fine to medium sandy matrix. The formation seems to represent one portion of a larger regional system.

Data available at this time indicate that the main west-northwesterly trending faults act as hydrogeologic barriers separating groundwater in the Juana Diaz formation south of the faults from groundwater in the Ponce formation north of the faulting. Additional water level, water chemistry, and geologic data obtained during and following installation of the monitoring wells indicate the presence of several fault blocks within the Juana Diaz formation. These fault blocks, plus the steeply dipping beds and impermeable unsaturated zone, are controlling the occurrence and movement of groundwater within the Juana Diaz formation.

Groundwater levels in the Ponce formation average 20 feet or less above sea level, typical of water levels in the region. Recharge from the Rio Pastillo drainage basin is slow and sparse.

Water levels in the Juana Diaz formation range from 86 to almost 200 feet above sea level, suggesting that it is not part of the regional system. Also, water levels within the area of the Juana Diaz formation vary significantly, indicating the presence of more than one water-bearing zone or known fault blocks within the Juana Diaz formation may not be hydraulically interconnected. There is no recharge from the soil to the aquifer.

Laboratory tests performed on surface soils indicate a permeability of approximately 10^{-8} cm/sec. Slug tests in monitoring wells screened in the saturated zones have greater permeability, with results ranging from 10^{-6} to 10^{-4} cm/sec. Although these permeability values imply flow potential, the groundwater itself is likely to be connate (water trapped in the formation during the emplacement of the formation).

To investigate whether the formation water is connate, groundwater age dating was done. The age dating, (done by evaluation of isotopes of common elements such as oxygen and carbon) showed that groundwater from the Ponce formation is different from groundwater from the Juana Diaz, that groundwater residence time in the latter is on the order of thousands of years (i.e., that it is not a fast flushing aquifer) and that surface water at the site is not a source of formation water.

1.3.5 Receptor Information (References 4,11)

The site is located less than half a mile from the city limits of Ponce and approximately a mile from the Caribbean. Ponce, Puerto Rico's second largest city, lost population between 1970, when it had 128,233 people, and 1980, when the population was 111,314. On the other hand, the greater Ponce metropolitan area gained population during the decade growing from 158,981 in 1970 to 189,046 in 1980. Its growth, fueled largely by industrial expansion, is expected to continue. Three urban corridors have developed in the Canas River Valley along Highway 14 and along the roads leading to the sea.

Jardines del Caribe, the closest community, is located approximately 750 feet northeast of the site. A 1983 aerial photo shows the community with several hundred closely spaced houses.

Two quarries are located less than a quarter mile from the site, though the history of their activity is unknown. Aerial photos of the site indicate that quarrying was initiated sometime during the period 1951 - 1967, and continued into the 1970's (Reference 4, Appendix 4).

No known drinking water wells exist near the site. In the vicinity of the site, several public wells have been drilled, but were abandoned due to high mineral content. At least one active private well does exist southwest of the site, but no information about its

status or quality is available. There are several industrial wells located 260 to 900 feet northeast of the site, including two (2) for Western Phern Labs and four (4) for Ponce P.R. Cement Company (Reference Part B Application: Characterization Report, pages 28-29, F-23).

Surrounding land uses are illustrated in Figure 1-4. Lightly forested land is the dominant use.

1.3.6 Release Pathways

Soil/Groundwater (References 4,6,7,8,13)

The site is unique in that there are severe faults beneath it. The faulting which splits the site has served to restrict lateral groundwater flow by trapping groundwater in isolated pockets. Several pockets or zones were identified during well drilling. The isolated flow zones that were encountered had large differences in piezometric head, implying that the faults serve as barriers rather than conduits for groundwater flow.

As stated previously, it was found that groundwater residence time in the formation below the site is on the order of thousands of years, illustrating that this is not a fast flushing aquifer and that surface water at the site is not a primary source of formation water. Therefore, wells could not yield enough water for potable purposes and groundwater is not a likely release pathway.

There are eight groundwater monitoring wells at the site. Several of these wells are not functional due to construction related problems. Figure 1-5 shows the location of the eight monitoring wells. Figures 1-6 through 1-9 are hydrogeologic cross-sections which show the groundwater levels of the wells. The wells which were installed for the proposed new landfill are placed in a radial pattern around the proposed cell. These wells have been sampled and analyzed for priority pollutants. Data indicated that the water is saline with chloride concentrations ranging from 450 to 1,860 ppm, possibly attributable to the mineral content of the soils and the slow movement of the groundwater. Heavy metals were detected in some wells including: chromium, nickel, barium, copper, lead and zinc (concentrations ranging from 0.01 to 1.6 ppm).

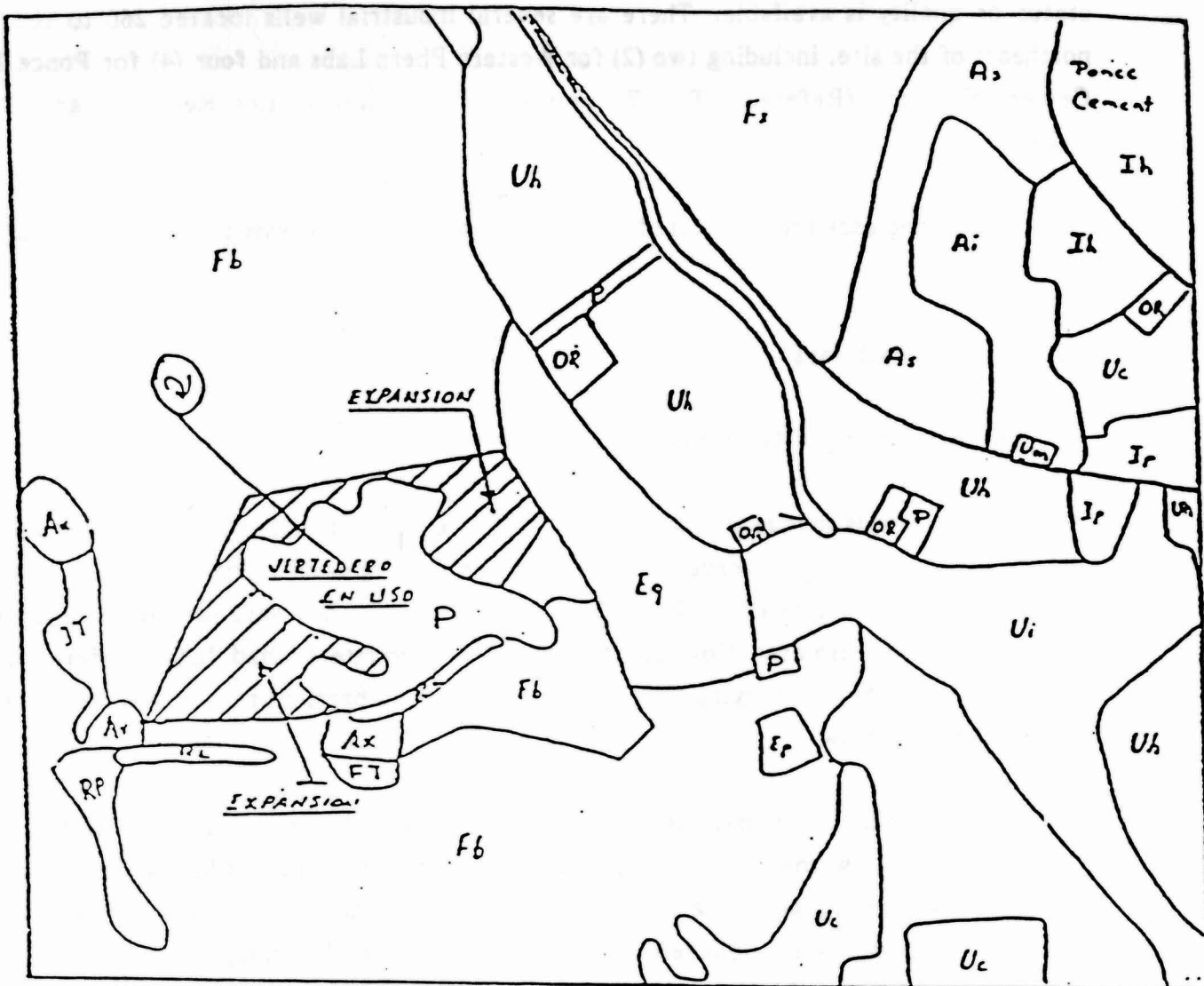


Figure Adjacent Land Uses -- Site and Vicinity

LEGEND

P = Public Facilities
 Eg = Stone Pit
 OR = Recreational/Open Space
 Ax = Pastures
 Ep = Borrow Pit
 As = Sugar Cane
 Ih = Heavy Industry

Fb = Forest Area-Light
 Uh = Urban
 RL = Residential, low density
 Uc = Under construction
 Ft = Forest Area-Dispersed
 Ai = Inactive Agriculture
 Ip = Industrial Park

Scale: 1:20,000

Source: Dept. of Natural Resources, Puerto Rico, 1978.

FIGURE 1-4

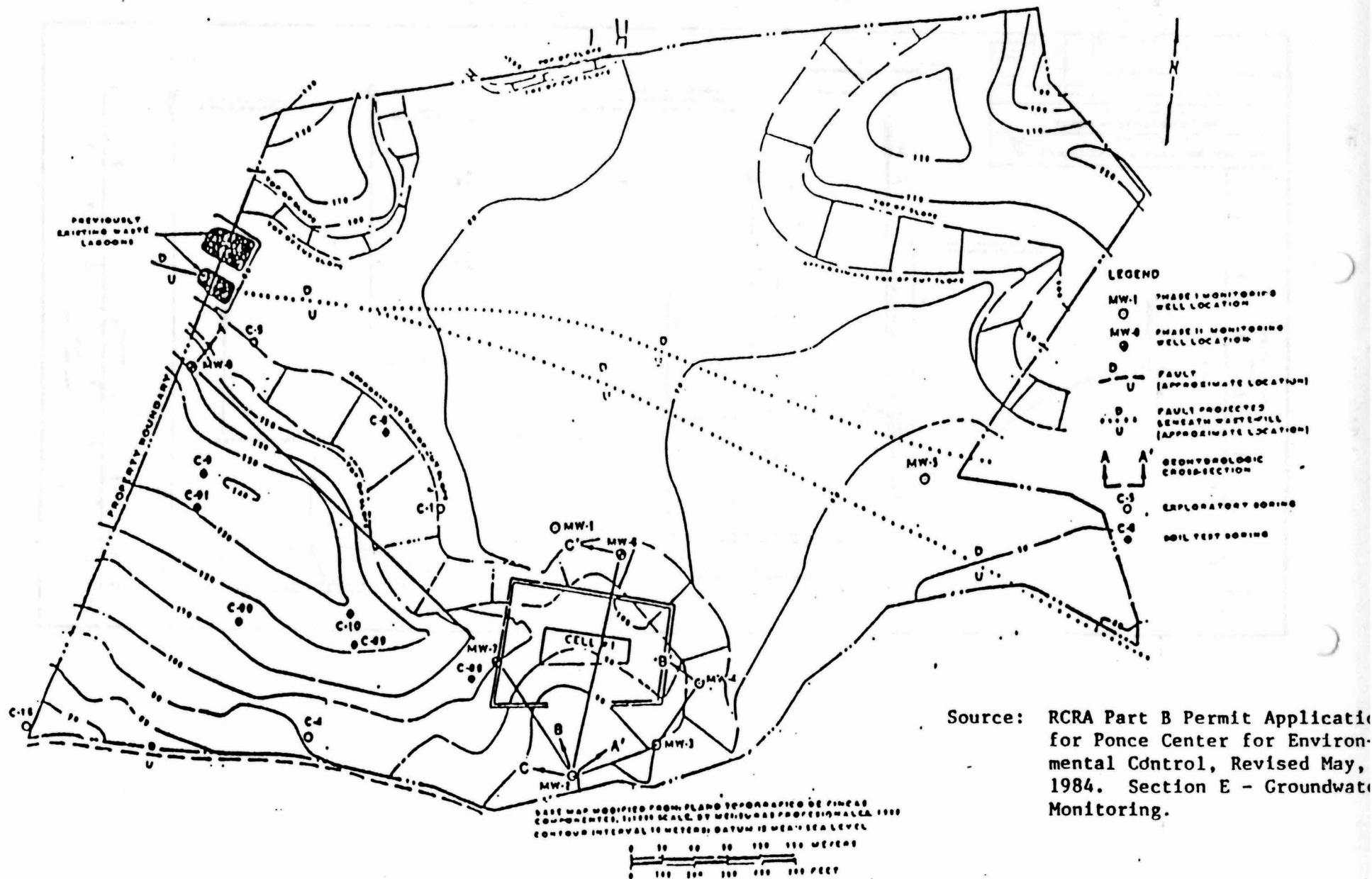
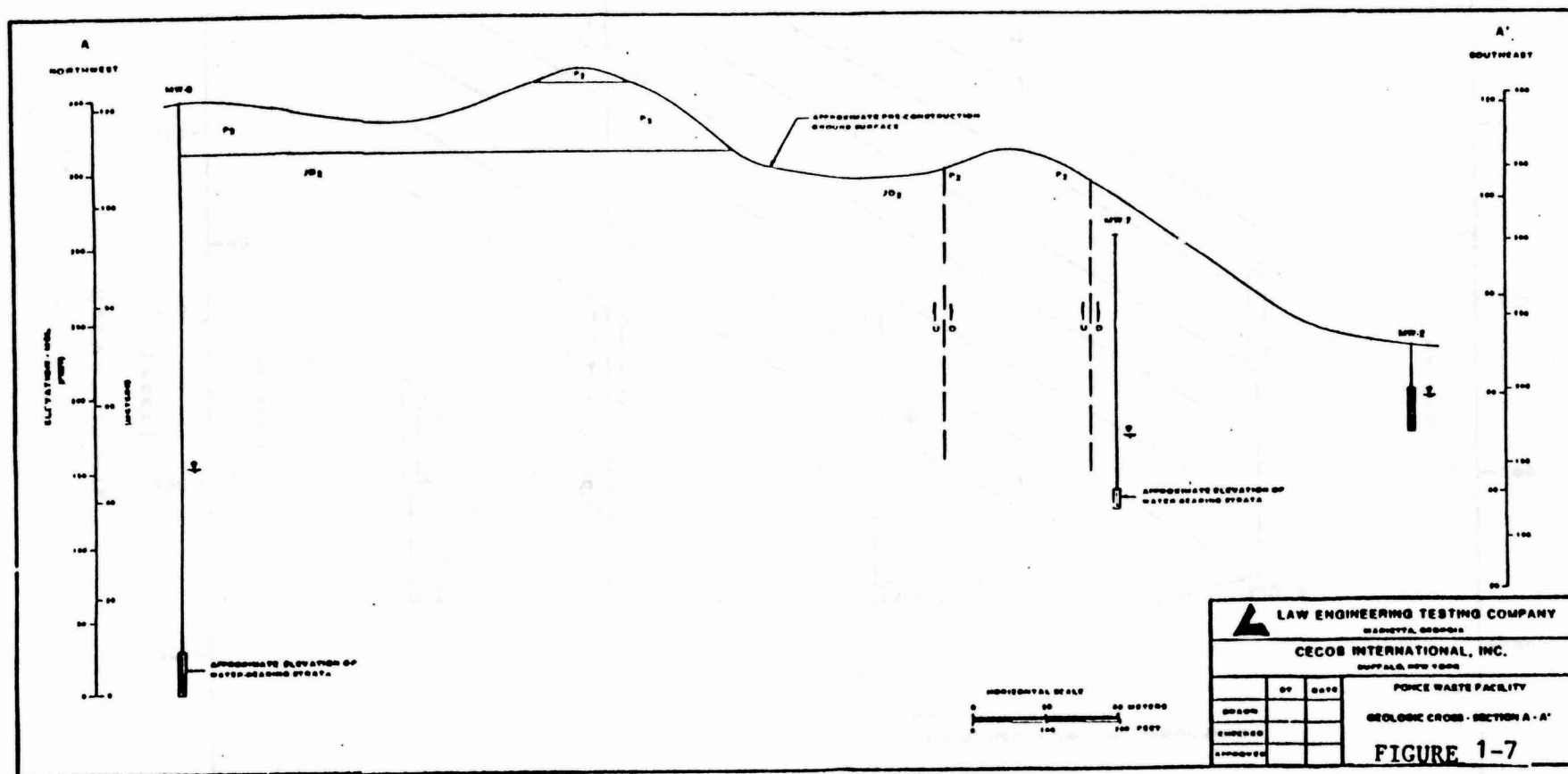
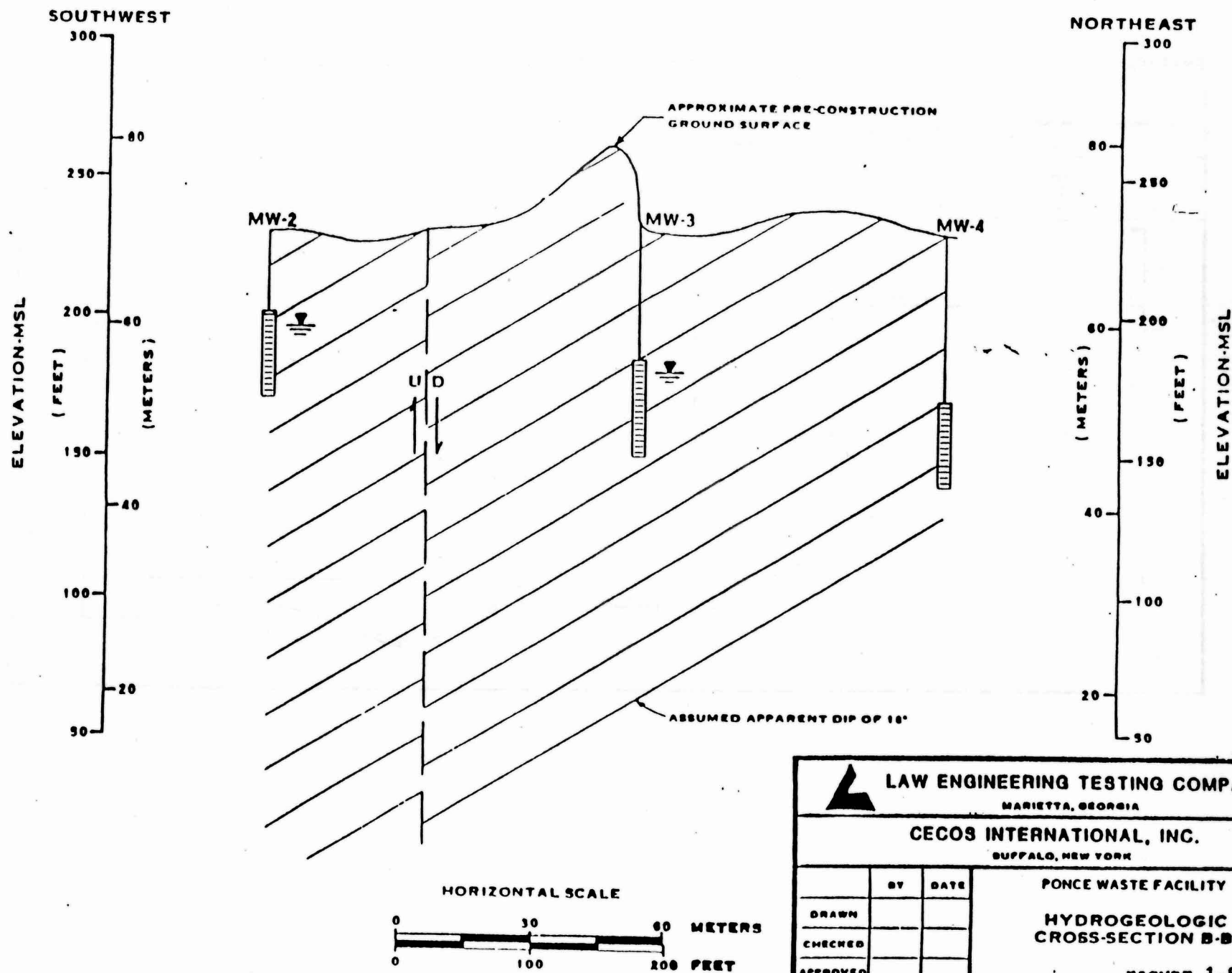


Figure 1-5 Location Plan -- Existing Monitoring Wells and Geohydrologic Cross-section

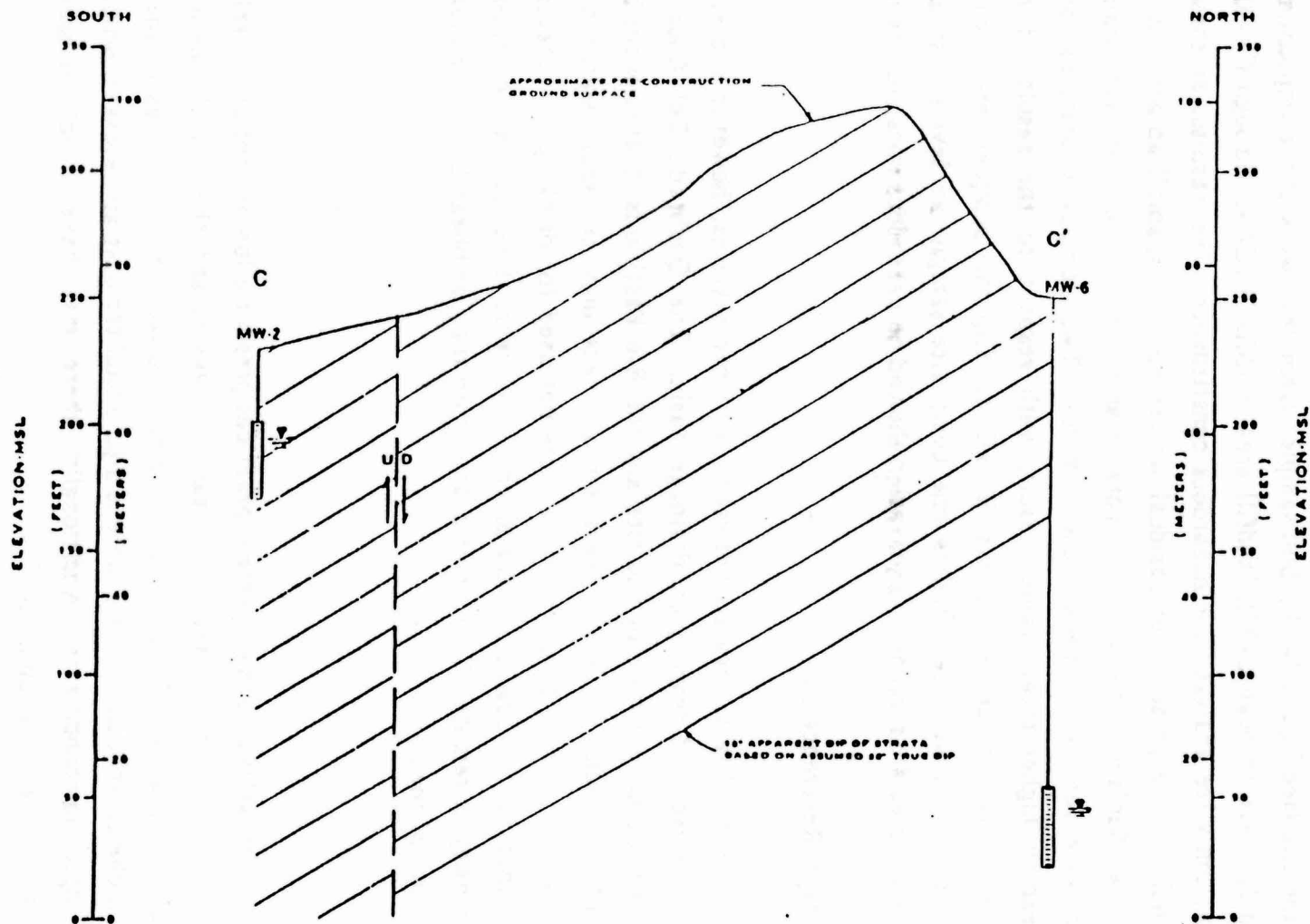
Source: RCRA Part B Permit Application for Ponce Center for Environmental Control. Revised May, 1984, Section E - Groundwater Monitoring




Source: RCRA Part B Permit Application for Ponce Center for Environmental Control. Revised May, 1984, Section E - Groundwater Monitoring



Source: RCRA Part B Permit Application for Ponce Center for Environmental Control. Revised May, 1984, Section E- Groundwater Monitoring



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CECOS INTERNATIONAL, INC. BUFFALO, NEW YORK			
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CHECKED			
APPROVED			
PONCE WASTE FACILITY HYDROGEOLOGIC CROSS-SECTION C-C' FIGURE 1-9			

Additionally BHC, dichloroethylene, dieldrin, and endosulfan were also detected (see Appendix A). The wells that exist nearby are used for industrial purposes. The water is generally not used for drinking because of its high salinity.

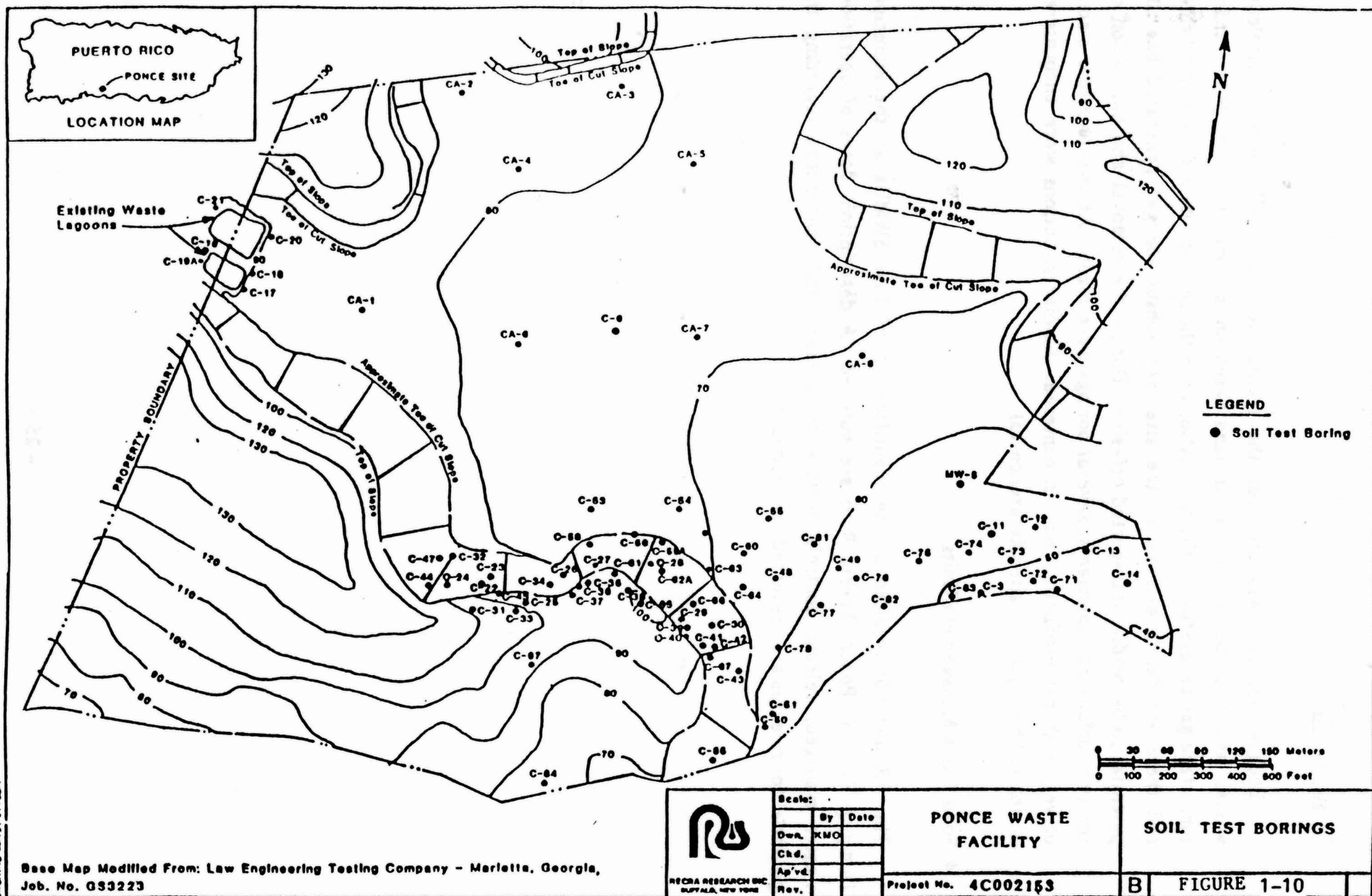
Between the period of 1983 and 1984, approximately 100 soil borings were obtained by CECOS at the site (see Figure 1-10). Soil samples from the two surface impoundments (SWMUs 1 and 2) (C-16 through C-20), landfill area (SWMU 3) (CA-1 through CA-8) and roadway excavation were analyzed for hazardous constituents. The results, as shown in Appendix B, indicate the presence of residual wastes containing small amounts of total cyanide at the two Surface Impoundments. Total cyanide results for these materials are higher than cyanide results for background samples. Two composite samples for the landfill area exhibit higher total cyanide results with respect to the results of other composites. Total barium concentrations in all co-disposal samples are high and polychlorinated biphenyls were detected in one composite sample at levels just above detection. Soils sampled from roadway excavation showed no hazardous constituents.

Surface Water (Reference 11)

The Ponce facility is located between two river systems, however the site is topographically isolated from each drainage basin. The Quebrada Del Aqua runs approximately 1,500 feet west of the site and the Rio Pastillo is located about 2,000 feet east of the Ponce facility. These stream beds only transport water during periods of heavy rainfall. Thus, the waters are not used for drinking or recreational purposes. Since these streams are dry much of the year, the potential for exposure via this pathway is remote. These rivers drain into the Caribbean Sea approximately 2.5 miles south of the site.

Air

Current disposal/waste management practices present a low potential for release as the facility reportedly manages only sanitary wastes and the landfill operations include daily coverage of wastes. Because the past management activities at the site may have included volatile wastes, there is a potential for past air releases, primarily from the open impoundments. Additionally, there may have been releases of particulates during excavation activities.



Source: Report of Investigations, Co-disposal Area, and Closure Activities associated with SK & F Surface Impoundment Area, Ponce Center for Environmental Control, by CECOS International, Inc., Kenmore, N. Y. May, 1984 (Reference 13).

Subsurface Gas

Because the site was used for the management of solid wastes, petroleum wastes, and other organic wastes in land based units, there is a high potential for subsurface gas generation at the site. Also, since the soils in the area are impervious and there are faults existing at the site, any subsurface gas generated has the potential to be readily transported off-site. During the removal and excavation of the two surface impoundments, several borings were made. At two locations a zone of very high gas production was encountered. Similar situations were encountered during soil boring at the site (Reference 13).

1.4 Solid Waste Management Units

The PR and VSI resulted in the identification of four SWMUs at the Municipal Dumping Facility, Ponce, Puerto Rico are outlined. A description, dates of operation, wastes managed, release controls, history of releases, and conclusions regarding the potential for releases are presented for each unit.

Unit Number: SWMU 1

Unit Name: Surface Impoundment #1

Unit Description: This surface impoundment was located at the western edge of the site. The impoundment reportedly had a gunite liner and earthen dikes. The exact location of this unit could not be identified during the VSI.

Date of Start Up: The exact date of construction date is not known. The unit was authorized to accept waste in February 1980.

Date of Closure: September 24, 1983. Closure was effected without EPA approval.

Wastes Managed: Industrial sludge from SK & F Laboratories containing heavy metals (barium, chromium, copper, iron, nickel, silver and zinc), halogenated organics, soluble organic carbon, sulfide and cyanide.

Release Controls: A gunite liner and earth dikes. The liner however was reported to be cracked or broken before closure. (Ref. 2,14)

History of Release: No releases were reported in the available file material for the active period of the unit. However, during closure, analyses of residual soils underlying the impoundment shared elevated levels of cyanide.

Conclusions: Soil/Groundwater: There is a high potential for release to soil. Based on the soil sampling data and because the unit was closed without an approved plan. Given the unique hydrogeological features at the site, the potential for releases to groundwater is moderate particularly with respect to the perched water tables.

Air: Since the impoundment has been closed, there is a low potential for on-going releases of hazardous constituents to the air from this unit. During the active life of the unit, there may have been a potential for releases based on the nature of the wastes managed. However, the available data is insufficient to make a definite determination.

Conclusions:
(Cont'd)

Surface Water: Based on the distance to surface water and the hydrogeologic setting of the site, there is a low potential for release to surface water from this unit.

Subsurface Gas: During the removal and excavation of the unit several borings were made. At two locations a zone of very high gas production was encountered. Therefore, there is a high potential for subsurface gas generation. Also, since the soils in the area are impervious and there are faults existing at the site, any subsurface gas generated has the potential to be readily transported off-site.

Further Action:

The exact location of this surface impoundment should be identified and details of the closure should be provided to EPA. A subsurface investigation should be conducted to characterize the soil contamination.

Unit Number: SWMU 2

Unit Name: Surface Impoundment #2

Unit Description: This surface impoundment was located at the western edge of the site. The unit reportedly had a synthetic liner and earthen dikes. the exact location of this unit could not be identified during the VSI.

Date of Start Up: The exact date of construction is not known. The unit was authorized to accept waste in February 1980.

Date of Closure: September 24, 1983. Closure was effected without EPA approval.

Wastes Managed: Industrial sludge from SK & F Laboratories containing heavy metals (barium, chromium, copper, iron, nickel, silver and zinc), halogenated organics, soluble organic carbon, sulfide and cyanide.

Release Controls: A synthetic liner and earth dikes. The integrity of the liner was reported to be impaired before closure.

History of Release: No releases were reported in the available file material for the active period of the unit. However, during closure, analyses of residual soils underlying the impoundment showed elevated levels of cyanide.

Conclusions:

Soil/Groundwater: There is a high potential for release to soil based on the soil sampling data and because the unit was closed without an approved plan. Given the unique hydrogeological features at the site, the potential for releases to groundwater is moderate, particularly with respect to the perched water tables.

Air: Since the impoundment has been closed, there is a low potential for on-going releases of hazardous constituents to the air from this unit. During the active life of the unit, there was a potential for release based on the nature of the wastes managed.

Conclusions (cont.d):

Surface Water: Based on the distance to surface water and the hydrogeologic setting of the site, there is a low potential for release to surface water from this unit.

Subsurface Gas: During the removal and excavation of the unit, several borings were made. At two locations a zone of very high gas production was encountered. Therefore, there is a high potential for subsurface gas generation. Also, since the soils in the area are impervious and there are faults existing at the site, any subsurface gas generated has the potential to be readily transported off-site.

Further Action:

The exact location of this surface impoundment should be identified and details of the closure provided to EPA. A subsurface investigation should be conducted to characterize the soil contamination.

Unit Number: SWMU 3

Unit Name: Sanitary Landfill

Unit Description: The unit is located west of the surface impoundments (SWMU 1 and 2). The landfill is operated in stages ranging from 2 to 3 tiers.

Date of Start Up: 1974

Date of Closure: The unit is currently active. The unit reportedly stopped receiving hazardous wastes in September 1984.

Wastes Managed: The landfill was originally intended for municipal solid waste disposal only. However, there is documented evidence of hazardous wastes being disposed of at the landfill, including spent caustic soda, hydrocarbon sludge, PCB contaminated oil and wastes (see Table 1-1 Section 1.2).

Release Controls: No releases controls were identified for this unit.

History of Release: Soil borings and groundwater analyses indicated the presence of hazardous constituents including barium, cyanide, and PCB in soils and groundwater.

Conclusions: Soil/Groundwater: Soil borings and groundwater analyses indicated the presence of hazardous constituents including barium, cyanide, and PCB in soils and groundwater. Therefore, there is a high potential for releases to soil and groundwater from this unit.

Air: There is a low potential for releases of hazardous constituents from surface soils to air through dust transportation.

Surface Water: The potential for release to surface water through infiltration is low due to the hydrogeological features of the site.

Subsurface Gas: Due to the organic nature of the wastes, the landfill is subject to anaerobic, septic, or putrefaction conditions. Therefore, there is a high potential for subsurface gas generation.

Further Action: A subsurface investigation should be conducted to characterize the soil and groundwater contamination. Gas wells should be installed to monitor the potential migration of subsurface gas.

Unit Number:	SWMU 4
Unit Name:	Liquid Waste Lagoon
Unit Description:	This unit appears to be located along the northern boundary of the site. The exact location is unknown. The existence of this unit is based on interpretation of surface features from aerial photos taken on March 23, 1983, by Law Engineering. This lagoon reportedly received wastes from an nearby tuna packing operation.
Date of Start Up:	The date of start-up is not known.
Date of Closure:	The unit is presently inactive, but no information as to the period of operation was available.
Wastes Managed:	Reportedly wastes from a tuna operation were placed in this lagoon. It is unknown if other wastes were placed in this lagoon. Soil borings from the area indicate the presence of sludges, of unknown characteristics and constituents.
Release Controls:	No release controls were identified for this unit.
History of Release:	No releases were reported in the available file material.
Conclusions:	<p>Soil/Groundwater: Soil borings indicated the presence of a zone of wastes from a tuna packing plant based on the unusual texture and odor of the material. Therefore, there is a high potential for releases to soil and groundwater from this unit.</p> <p>Surface Water: The potential for releases to surface water through infiltration or groundwater is low due to the hydrogeological features of the site.</p> <p>Air: Because the unit is inactive, there is a low potential for on-going releases to air from this unit. It is likely that nuisance odors were generated during the active operational life of the unit.</p> <p>Subsurface Gas: Due to the organic nature of the wastes, the unit is subject to anaerobic, septic, or putrefaction conditions. Therefore, there is a high potential for subsurface gas generation.</p>
Further Action:	A subsurface investigation should be conducted to determine if there have been releases of hazardous constituents to the soil and groundwater and to determine the extent of any releases. Gas wells should be installed to monitor the potential migration of subsurface gas.

1.5 Other Areas of Concern

No other areas of concern were identified for this facility during the PR and VSI.

1.6 Conclusions and Suggested Further Actions

In conclusion, within the scope of the RCRA Facility Assessment Program, no sampling visit of the site is warranted for the reasons listed below:

- o Evidence of releases to the soil and groundwater are documented.
- o The severe geologic faulting of the site makes any groundwater monitoring extremely difficult if not impossible, on a short term, singular visit basis.
- o The lack of operating records and continued landscape alternations due to ongoing landfill activities makes it impractical to locate the depths or location where hazardous materials were buried within the scope of a sampling visit.

Based on the above, including documented evidences of releases, it is suggested that the investigation of the facility move to a RCRA Facility Investigation Phase to include a subsurface investigation to determine the extent of the contamination at the site.

1.7 References

1. Brief of Carlos Rivera Vicente. Re: Civil Proceeding 84-2360, Ponce vs CECOS, et al, November 5, 1984.
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4. RCRA Part B Permit Application, Revised May 1984, for Ponce Center for Environmental Control, Puerto Rico.
5. Ponce Municipal Dump Partial Closure Plan - Surface Impoundment Area. May 18, 1983.
6. Ponce Waste Facility Geotechnical Exploration Final Report, November 3, 1983 (Revised December 15, 1983), by Law Engineering Testing Company.
7. Ponce Waste Facility Hydrogeologic Assessment/Monitoring Well Installation Draft Report, October 27, 1983, by Law Engineering Testing Company.
8. Attachment E3, Analytical Results, CECOS International, Inc., Priority Pollutant Analyses, September 19, 1983, by RCRA Environmental Laboratories.
9. Climatological Data, Puerto Rico and Virgin Islands, Department of Commerce, 1965.
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11. Ponce Center for Environmental Control: Exposure Information Report, CECOS International, Inc. August 8, 1985.